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IS 11908 (1986): Method for determination of colour fastness of textile fabrics to wet scrubbing [TXD 5: Chemical Methods of Test]



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IS : 11908 - 1986

*Indian Standard*

**METHOD FOR DETERMINATION OF  
COLOUR FASTNESS OF TEXTILE FABRICS  
TO WET SCRUBBING**

UDC 677.016.474 : 535.686.1

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**BUREAU OF INDIAN STANDARDS**  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 110002

**Gr 2**

*May 1987*

**AMENDMENT NO. 1 MAY 2002  
TO  
IS 11908 : 1986 METHOD FOR DETERMINATION OF  
COLOUR FASTNESS OF TEXTILE FABRICS TO WET  
SCRUBBING**

( *Page 4, clause 4.1.2* ) — Insert the following at the end of the clause:

'NOTE — Other brushes similar to the brush described above may also be used as long as there is agreement between interested parties and the same be reported in the test report.'

( TX 5 )

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Reprography Unit, BIS, New Delhi, India

# Indian Standard

## METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE FABRICS TO WET SCRUBBING

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## *Indian Standard*

# METHOD FOR DETERMINATION OF COLOUR FASTNESS OF TEXTILE FABRICS TO WET SCRUBBING

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 31 December 1986, after the draft finalized by the Chemical Methods of Test Sectional Committee had been approved by the Textile Division Council.

**0.2** Pigment printing of textile fabrics is very common in India. The pigments are fixed on to the fabric surface by the use of binder and there is almost neither any chemical linkage of the pigment particles with the fabric nor any penetration inside the fabric structure. Thus, due to the surface deposition of pigments by the binder on the textile fabric, the deposited film may break up when subjected to wet scrubbing action during home laundering. So it is necessary that the pigment printed fabric, in addition to other colour fastness requirements, should withstand the wet scrubbing action during home laundering.

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### 1. SCOPE

**1.1** This standard prescribes a method for determination of colour fastness of pigment printed textile fabrics of all kinds to the action of wet scrubbing during home laundering.

### 2. PRINCIPLE

**2.1** A specimen of the pigment printed textile fabric is dipped in a hot soap solution containing sodium carbonate and scrubbed in wet condition with a nylon bristle brush. The specimen is then rinsed and dried. The change in colour of the specimen is assessed with standard grey scale for change in colour by comparing with that of original unscrubbed specimen.

### 3. SAMPLING

**3.1 Lot** — The quantity of textile fabric of one definite type and quality printed with the same pigment composition under essentially similar conditions shall constitute a lot.



**3.2** Test sample from the lot shall be drawn so as to be the representative of the lot. Test sample drawn in accordance with the relevant material specification or as agreed to between the buyer and the seller shall be held to be representative of the lot. The test samples so selected shall consist of a minimum of three pieces from the lot.

## **4. APPARATUS**

### **4.1 A Suitable Brushing Device**

**4.1.1** It consists of a base board over which a small carriage is drawn. This carriage runs on parallel tracks attached to the edge of the upper surface of the base board. The brush is hinged with pin hinges at the rear edge of the base board and rests on the carriage vertically with a load of 150 g.

**4.1.2** The brush consists of two rows of a 0.41 mm diameter stiff nylon bristle tufts with 20 bristles per tuft and 4 tufts per 25.0 mm. The two rows of tufts are staggered. The tufts are cut to a uniform length of 19 mm. A clamp is attached to the forward edge of the movable carriage to permit holding the specimen on the carriage during the brushing operation.

**4.1.3** After the specimen has been put in place on the carriage and fastened by means of the clamps, the brush is raised, the carriage pushed to the rear, and the brush lowered to the face of the specimen. The carriage is then drawn forward by hand at uniform rate, similar to crock meter.

**4.2 Grey Scale** — for assessing change in colour ( *see* IS : 768-1982\* ).

### **4.3 A Beaker of 500 ml Capacity**

## **5. REAGENTS**

**5.0 Quality of Reagents** — Unless specified otherwise, pure chemicals shall be employed in the tests and distilled water ( *see* IS : 1070-1977† ) shall be used where the use of water as reagent is intended.

NOTE — 'Pure chemicals' shall mean the chemicals that do not contain impurities which affect the test results.

**5.1 Soap Solution** — The soap solution shall contain 5 g/l soap and 2 g/l sodium carbonate. The soap shall not have moisture regain more than 5 percent and shall be free from optical brightening agents.

**5.1.1** The soap meeting the requirements ( based on dry mass ) as given in Table 1 is satisfactory.

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\*Method for evaluating change in colour ( *first revision* ).

†Specification for water for general laboratory use ( *second revision* ).

**TABLE 1 REQUIREMENTS FOR SOAP**

( Clause 5.1.1 )

| Sl. No. | CHARACTERISTIC   | REQUIREMENT |
|---------|--|-------------|
| i)      | Free alkali calculated as $\text{Na}_2\text{CO}_3$ ( Max ) | 0.3 percent |
| ii)     | Free alkali calculated as NaOH ( Max )                     | 0.1 percent |
| iii)    | Combined fatty acids calculated as Na salts ( Min )        | 85 percent  |
| iv)     | Titre of mixed fatty acid prepared from the soap ( Max )   | 39°C        |
| v)      | Iodine value of fatty acids ( Max )                        | 50          |

## 6. PREPARATION OF TEST SPECIMENS

**6.1** From the test sample ( 3.2 ), draw at least three test specimens of 250 mm × 75 mm size taking care that no two specimens are cut from the same piece.

## 7. PROCEDURE

**7.1** Take a test specimen ( 6.1 ) and dip it for 5 to 10 minutes in the soap solution ( 5.1 ) taken in a beaker and previously heated to 55 to 60°C, at M:L ratio of 1:50.

**7.2** Take out the specimen from the beaker and remove excess soap solution just by hanging in air for 5 minutes. The specimen thus obtained should carry sufficient soap solution so that scrubbing is proper.

**7.3** Mount the specimen on the carriage of the brushing device with printed side up. While mounting the specimen keep it flat and smooth without wrinkles or creases and do not stretch or distort it. Fasten the specimen by means of clamp.

**7.4** Raise the brush, push the carriage to the rear and lower the nylon bristle brush to rest on the specimen. Draw the carriage under the brush by hand at uniform rate fifty times from each end that is a total of hundred strokes.

NOTE — When the brush is lowered to rest on the mounted specimen, it should be positioned approximately 3.0 mm in from the raw cut edge of the specimen so that the specimen will not be distorted during the brushing operation. The cloth should be maintained properly wet during wet scrubbing.

**7.5** Take out the specimen from the brushing device and rinse it in running tap water till all the soap is removed. Then dry the specimen in air without exposing in sunlight.

## **IS : 11908 - 1986**

**7.6** Evaluate the change in colour of the treated specimen by the method prescribed in IS : 768-1982\*.

NOTE 1 — Treated test specimen should be allowed to cool after drying to regain their normal moisture content before evaluation.

NOTE 2 — In cases of doubt in the colour fastness rating as assessed by an observer, the assessment may be made by three observers and the overall average rating may be reported accordingly.

**7.7** Repeat the test procedure from 7.1 to 7.6 with the remaining test specimens.

## **8. REPORT**

**8.1** The test report shall include the following information:

- a) Type and quality of fabric.
- b) The numerical ratings for change in colour for each individual test specimen.

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\*Method for evaluating change in colour (*first revision*).

( *Continued from page 2* )

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# INTERNATIONAL SYSTEM OF UNITS ( SI UNITS )

## Base Units

| QUANTITY                  | UNIT     | SYMBOL |
|---------------------------|----------|--------|
| Length                    | metre    | m      |
| Mass                      | kilogram | kg     |
| Time                      | second   | s      |
| Electric current          | ampere   | A      |
| Thermodynamic temperature | kelvin   | K      |
| Luminous intensity        | candela  | cd     |
| Amount of substance       | mole     | mol    |

## Supplementary Units

| QUANTITY    | UNIT      | SYMBOL |
|-------------|-----------|--------|
| Plane angle | radian    | rad    |
| Solid angle | steradian | sr     |

## Derived Units

| QUANTITY             | UNIT    | SYMBOL | DEFINITION                      |
|----------------------|---------|--------|---------------------------------|
| Force                | newton  | N      | 1 N = 1 kg.m/s <sup>2</sup>     |
| Energy               | joule   | J      | 1 J = 1 N.m                     |
| Power                | watt    | W      | 1 W = 1 J/s                     |
| Flux                 | weber   | Wb     | 1 Wb = 1 V.s                    |
| Flux density         | tesla   | T      | 1 T = 1 Wb/m <sup>2</sup>       |
| Frequency            | hertz   | Hz     | 1 Hz = 1 c/s (s <sup>-1</sup> ) |
| Electric conductance | siemens | S      | 1 S = 1 A/V                     |
| Electromotive force  | volt    | V      | 1 V = 1 W/A                     |
| Pressure, stress     | pascal  | Pa     | 1 Pa = 1 N/m <sup>2</sup>       |

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